Homework Given Aug 05 DUE Aug 08

Questions 12-22 are based on the following passage and supplementary material.

Dark Snow

Most of Greenland's interior is covered by a thick layer of ice and compressed snow known as the Greenland Ice Sheet. The size of the ice sheet fluctuates seasonally: in summer, average daily high temperatures in Greenland can rise to slightly above 50 degrees Fahrenheit, partially melting the ice; in the winter, the sheet thickens as additional snow falls, and average daily low temperatures can drop 12 to as low as 20 degrees.

12

Which choice most accurately and effectively represents the information in the graph?

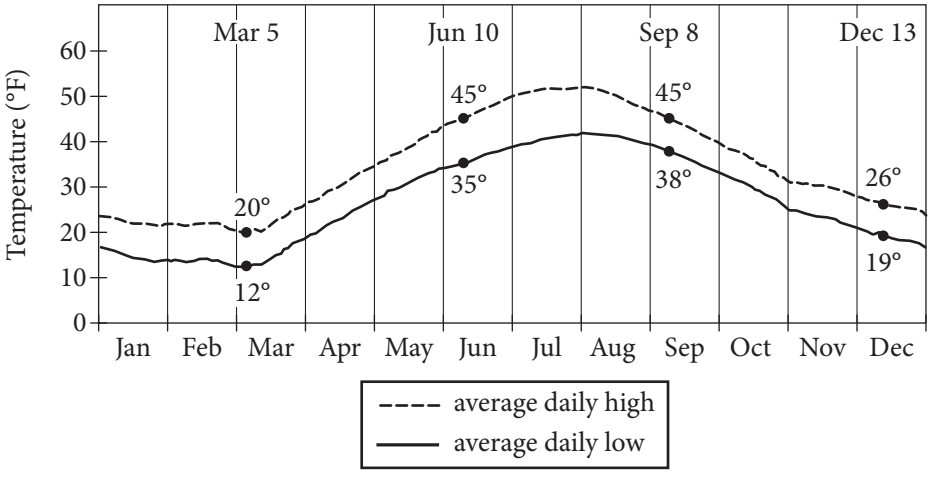
A) NO CHANGE

B) to 12 degrees Fahrenheit.

C) to their lowest point on December 13.

D) to 10 degrees Fahrenheit and stay there for months.

Average Daily High and Low Temperatures Recorded at Nuuk Weather Station, Greenland (1961—1990)



Adapted from WMO. ©2014 by World Meteorological Organization.

Typically, the ice sheet begins to show evidence of thawing in late **13** summer. This follows several weeks of higher temperatures. **14** For example, in the summer of 2012, virtually the entire Greenland Ice Sheet underwent thawing at or near its surface by mid-July, the earliest date on record. Most scientists looking for the causes of the Great Melt of 2012 have focused exclusively on rising temperatures. The summer of 2012 was the warmest in 170 years, records show. But Jason **15** Box, an associate professor of geology at Ohio State believes that another factor added to the early **16** thaw; the "dark snow" problem.

13

Which choice most effectively combines the two sentences at the underlined portion?

A) summer, following
B) summer, and this thawing follows
C) summer, and such thawing follows
D) summer and this evidence follows

14

A) NO CHANGE
B) However,
C) As such,
D) Moreover,

15

A) NO CHANGE
B) Box an associate professor of geology at Ohio State,
C) Box, an associate professor of geology at Ohio State,
D) Box, an associate professor of geology, at Ohio State

16

A) NO CHANGE
B) thaw; and it was
C) thaw:
D) thaw: being

According to Box, a leading Greenland expert, tundra fires in 2012 from as far away as North America produced great amounts of soot, some **17** of it drifted over Greenland in giant plumes of smoke and then **18** fell as particles onto the ice sheet. Scientists have long known that soot particles facilitate melting by darkening snow and ice, limiting **19** it's ability to reflect the Sun's rays. As Box explains, "Soot is an extremely powerful light absorber. It settles over the ice and captures the Sun's heat." The result is a self-reinforcing cycle. As the ice melts, the land and water under the ice become exposed, and since land and water are darker than snow, the surface absorbs even more heat, which **20** is related to the rising temperatures.

17

A) NO CHANGE
B) soot
C) of which
D) DELETE the underlined portion.

18

A) NO CHANGE
B) falls
C) will fall
D) had fallen

19

A) NO CHANGE
B) its
C) there
D) their

20

Which choice best completes the description of a self-reinforcing cycle?

A) NO CHANGE
B) raises the surface temperature.
C) begins to cool at a certain point.
D) leads to additional melting.

[1] Box's research is important because the fires of 2012 may not be a one-time phenomenon. [2] According to scientists, rising Arctic temperatures are making northern latitudes greener and thus more fire prone. [3] The pattern Box observed in 2012 may repeat **21** itself again, with harmful effects on the Arctic ecosystem. [4] Box is currently organizing an expedition to gather this crucial information. [5] The next step for Box and his team is to travel to Greenland to perform direct sampling of the ice in order to determine just how much the soot is contributing to the melting of the ice sheet. [6] Members of the public will be able to track his team's progress—and even help fund the expedition—through a website Box has created. **22**

21

A) NO CHANGE
B) itself,
C) itself, with damage and
D) itself possibly,

22

To make this paragraph most logical, sentence 4 should be placed

A) where it is now.
B) after sentence 1.
C) after sentence 2.
D) after sentence 5.

Passage I

PROSE FICTION: *Fear of Success*

"You appear to have a fear of success," her doctor said.

"You mean a fear of failure, don't you?"

"No. A fear of *success*."

"You don't know what you're talking about!" she exclaimed as she stormed out of the doctor's office. As she passed the receptionist's desk, she wryly declared, "You can cancel all the rest of my appointments with Dr. Mornington. I'm cured."

"Are you sure you want to do that? The doctor has a nine-month waiting list. If you change your mind, you'll have to go to the end of the list."

"Don't worry. I won't be changing my mind. Like I said 'I'm cured." She knew the receptionist hadn't missed the sarcasm in her voice.

This exchange had occurred three months ago. She was now beginning to ruefully realize the accuracy of the saying, "The truth hurts."

At first, she had continued to scoff at the doctor's interpretation of her life's worries as a fear of success. The incidents the doctor focused on had been mere errors in judgment—or corrections of past errors. But then, as she tried to justify her own point of view, she began to see the doctor's perspective.

In the third grade, she had been caught copying from Bobby Jacobs' test. Most kids made the mistake of cheating at some point in their life. But she had copied from Bobby—a boy who struggled to earn C's. Why?

In high school, as her academic and athletic success was propelling her toward the Ivy League, she brazenly shoplifted some candy in front of the shopkeeper. When confronted, she blatantly lied, even as the evidence was pulled from her pocket and a videotape of the events played and replayed for her. As her best friend paid for the candy and begged for mercy, the store owner shook his head, but let her go.

Her college career was marked with small lapses in judgment, such as the vandalism of a campus bus, but as her Yale graduation approached, she ardently prepared for an interview with a prominent investment banking firm. "The hours are brutal!" she announced to her roommate. "But if I can survive the first two years, I'll be making well over six figures before I'm twenty-five!" She got the job and moved to the company's Atlanta office. She was paid well for the long hours, but she seldom had the opportunity to meet new friends with whom to spend her hard-earned money, and so, twenty-one months into the job, she quit.

For years, she had been applauding herself for making this wise personal decision. She didn't want to be one of those money-grubbers with no personal life! But what quality of life had she subsequently achieved? She flitted from one career to another, staying in each job just long enough to get out of debt. Each time, she quit to pursue her "true calling."

Her parents continued to let her live in the downstairs apartment of the working-class neighborhood home in which she had grown up. When she was working, she paid them rent; when she was unemployed, she didn't. What did they care? The old house was paid for and they weren't likely to spend the money on themselves. They would probably just save it for her modest inheritance. It was her money either way. Besides, her parents had never really understood her. They had recognized her intelligence only when her grade-school teachers had pointed it out. Her dad, a bricklayer by day and an armchair quarterback by night, had been integral in her athletic success, but intellectually, she had passed him by the time she hit high school. Her mom, a school nurse, was ever concerned, yet couldn't understand her daughter's caprice.

So, was the doctor right? Was she afraid of success? Was she afraid of being a misfit in the world outside her working-class neighborhood? Or was she afraid of falling in love, marrying, and having a child like herself? With a heavy sigh, she reached for the phone.

"Hi. I'd like to make an appointment with Dr. Mornington."

"Are you a current patient?"

"No."

"The first available appointment is in ten months," came the reply.

1. The passage is written from the point of view of:
   A. an unidentifiable narrator.
   B. the doctor of a very disturbed woman.
   C. a mother confused by her daughter's strange decisions.
   D. a working-class man.

2. Which of the following best describes the author's approach to presenting the story of the main character's discovery about herself?
   F. Starting immediately with a statement of the discovery in the character's voice and continuing with scenes that reveal how the discovery came about
   G. Revealing the character's self-awareness through a blend of reflection and scenes from the character's youth and adulthood
   H. Describing the physical details of scenes and summarizing their significance in a concluding statement in the character's voice
   J. Using dialogue in the midst of scenes from the character's youth and adulthood

3. Each of the events from the main character's youth and early adulthood reveal:
   A. the increasing antagonism between the main character and her doctor.
   B. the judgmental attitude of the main character's parents.
   C. the main character's failure to make wise decisions.
   D. the main character's inability to keep a job.

4. According to the passage, Dr. Mornington would most likely analyze the main character's blatant shoplifting as:
   F. an uncontrollable urge.
   G. the mimicry of similar crimes committed by other members of her family.
   H. an example of her brilliance.
   J. evidence of a subconscious wish to be caught.

5. As she is revealed in the shoplifting incident, the main character's best friend can best be characterized as:
   A. jealous.
   B. genuinely concerned.
   C. apathetic and uncaring.
   D. naïve.

6. As it is used in line 42, the word *ardently* most nearly means:
   F. half-heartedly.
   G. hotly.
   H. enthusiastically.
   J. loyally.

7. The main character's childhood home was:
   A. a working-class neighborhood of an unnamed city.
   B. a wealthy suburb in Connecticut.
   C. Atlanta.
   D. not mentioned in the passage.

8. The use of the phrase "true calling" in line 58 indicates that the main character:
   F. heard voices from God.
   G. worked in the telecommunications industry.
   H. was struggling to find her purpose in life.
   J. hated investment banking, but loved her next job.

9. The passage states that the main character's mother "couldn't understand her daughter's caprice." This most nearly means that the main character's mother:
   A. didn't understand the collegiate words that her daughter used.
   B. was concerned about her daughter's need to see a psychologist.
   C. thought her daughter spent too much of her time playing sports.
   D. did not know what caused her daughter's impulsive behavior.

10. Based on the telephone conversation at the end of the passage, it can most reasonably be inferred that:
    F. the main character is ready to trust her doctor and make positive changes in her life.
    G. Dr. Mornington's receptionist is lying about the long wait to meet with the doctor.
    H. the main character will not see Dr. Mornington.
    J. the main character is unwilling to recognize the need for change in her life.

Passage II

NATURAL SCIENCE: *An Enemy Within*

The human body's defense mechanisms are truly remarkable. When injured, the human body immediately begins to repair itself; when attacked by germs, it increases production of white blood cells to defend itself and fight back against the germs. And, throughout life, the brain and heart never take a break. With an ever-expanding understanding of how the body keeps itself healthy, modern medicine attempts to work with this predictable machine, supplementing the natural defenses where possible. Unfortunately, the machine occasionally malfunctions, and the very cells designed to protect the body instead attack its allies. For example, leukocytes (white blood cells) occasionally increase for no apparent reason, fighting not against germs, but healthy blood cells; this is commonly referred to as *leukemia*. Although certainly not a desired disease, doctors have made tremendous progress toward curing leukemia. Such is not the case for Huntington's Disease (HD).

HD is a devastating, degenerative brain disorder for which there is no cure. The disease results from genetically programmed degeneration of brain cells, called *neurons*, in certain areas of the brain. This degeneration causes uncontrolled movements, loss of intellectual faculties, and emotional disturbance. Early symptoms of Huntington's Disease may affect cognitive ability or mobility and include depression, mood swings, forgetfulness, irritability, clumsiness, involuntary twitching, and lack of coordination. As the disease progresses, concentration and short-term memory diminish and involuntary movements of the head, trunk, and limbs increase. Walking, speaking, and swallowing abilities deteriorate. Eventually, HD sufferers become unable to care for themselves and are totally dependent upon others. Death follows from complications such as choking, infection, or heart failure.

HD typically begins in midlife, between the ages of 30 and 45, though onset may occur as early as the age of 2. Children who develop the juvenile form of the disease rarely live to adulthood. HD affects males and females equally and crosses all ethnic and racial boundaries.

HD is a familial disease, passed from parent to child through a mutation in the normal gene. Each child of an HD parent has a 50–50 chance of inheriting the HD gene. If a child does not inherit the HD gene, he or she will not develop the disease and cannot pass it to subsequent generations. A person who inherits the HD gene will sooner or later develop the disease. Whether one child inherits the gene has no bearing on whether others will or will not inherit the gene. The rate of disease progression and the age of onset vary from person to person. A genetic test, coupled with a complete medical history and neurological and laboratory tests, help physicians diagnose HD. Presymptomatic testing is available for individuals who are at risk for carrying the HD gene. The test cannot predict when symptoms will begin, and, in the absence of a cure, some individuals "at risk" elect not to take the test. Strangely, in 1 to 3 percent of individuals with HD, no family history of HD can be found.

Named for Dr. George Huntington, who first described this hereditary disorder in 1872, HD is now recognized as one of the more common genetic disorders. More than a quarter of a million Americans have HD or are "at risk" of inheriting the disease from an affected parent. Since there is no known way to stop or reverse the course of HD, researchers are continuing to study the HD gene with an eye toward understanding how it causes disease in the human body. In the meantime, physicians prescribe a number of medications to help control emotional and movement problems associated with HD.

Until a cure is found, Huntington's Disease affects entire families: physically, emotionally, socially, and economically. For those afflicted, the gradual loss of capacities is humiliating; the realization that they may have passed the disease along to their offspring is horrifying. For the families, the physical and financial strain of caring for the afflicted is coupled with the realization that they may someday suffer the same fate. Given the current lack of treatment, HD is nothing less than an insidious villain, which lurks within its helpless victims.

11. As it is used in the first paragraph, the word *machine* most nearly means:
- **A.** the aggregate of human functions.
- **B.** a coin-operated device.
- **C.** a highly organized political group.
- **D.** a newly discovered medical tool.

12. According to the passage, medical researchers have made tremendous progress in their ability to cure:
- **F.** leukemia.
- **G.** Huntington's Disease.
- **H.** most types of cancer.
- **J.** white blood cells.

13. According to the passage, all of the following are examples of symptoms of Huntington's Disease EXCEPT:
- **A.** difficulty swallowing.
- **B.** forgetfulness.
- **C.** frequent rashes.
- **D.** involuntary twitching.

14. The symptoms of Huntington's Disease begin when:
- **F.** white blood cells multiply too quickly.
- **G.** leukocytes attack other cells.
- **H.** brain cells are cured.
- **J.** neurons degenerate.

15. As it is used in the passage, the word *juvenile* (line 41) most nearly means:
- **A.** young.
- **B.** emotionally immature.
- **C.** misbehaving.
- **D.** occurring in childhood.

16. According to the passage, Huntington's Disease occurs in:
- **F.** individuals of European descent only.
- **G.** people who carry the HD gene only.
- **H.** adults between the ages of thirty and forty-five only.
- **J.** all people with leukemia.

17. According to the passage, if someone carries the Huntington's Disease gene:
- **A.** he or she may never develop symptoms of HD.
- **B.** he or she will eventually lose some cognitive ability and coordination.
- **C.** he or she is likely to have unusual physical traits recognizable before the onset of symptoms.
- **D.** there is no way of knowing it until symptoms begin.

18. According to the passage, George Huntington:
- **F.** was the first person diagnosed with HD.
- **G.** was the doctor who developed a cure for HD.
- **H.** was the first doctor to describe the symptoms and hereditary nature of the disease.
- **J.** suffered from drastic mood swings.

19. The author of the passage compares HD to:
- **A.** a fly in the ointment.
- **B.** an insidious villain with malicious intent.
- **C.** a monkey wrench in the machine.
- **D.** a black-widow spider.

20. According to the passage, HD directly affects:

I. those who carry the HD gene.
II. the families of people with HD.
III. the patients of those who carry the HD gene

- **F.** I only
- **G.** I and II only
- **H.** II and III only
- **J.** I, II, and III

51. $8 \times 3\frac{1}{4} =$

A. $11\frac{1}{4}$

B. $24\frac{1}{4}$

C. $24\frac{1}{2}$

D. 25

E. 26

52. $100(2 + 0.1)^2 - 100 =$

F. 101
G. 141
H. 200
J. 301
K. 341

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53. Carlos is picking colored pencils from a large bin that contains only 480 red pencils, 240 green pencils, and 160 blue pencils. Without looking, Carlos pulls out 22 pencils. If the pencils were distributed randomly in the bin, how many pencils of each color is it most likely that he picked?

A. 8 red, 7 green, 7 blue
B. 10 red, 7 green, 5 blue
C. 10 red, 8 green, 4 blue
D. 11 red, 6 green, 5 blue
E. 12 red, 6 green, 4 blue

54. If $\frac{a}{b} = 2$ and $a = 8$, what is the value of $3b + a^2$?

F. 28
G. 70
H. 76
J. 88
K. 112

55. $3.99 \div 1.5 =$

A. 0.266
B. 0.267
C. 2.0
D. 2.66
E. 2.67

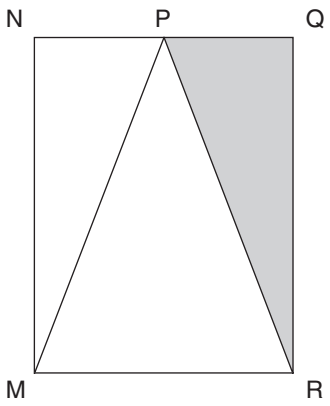
56. What time will it be 46 hours after 9:30 p.m. on Friday?

F. 7:30 p.m. Saturday
G. 7:30 a.m. Sunday
H. 6:30 p.m. Sunday
J. 7:30 p.m. Sunday
K. 9:30 p.m. Sunday

57. How many positive integers satisfy the inequality $x + 7 < 23$?

A. 15
B. 16
C. 17
D. 29
E. 30

58.



In the figure above, the base of $\triangle$MPR is a side of rectangle MNQR, and point P is the midpoint of $\overline{NQ}$. If the area of the shaded region is 24 square centimeters, what is the area of the region that is **not** shaded?

F. 24 sq cm
G. 48 sq cm
H. 64 sq cm
J. 72 sq cm
K. 96 sq cm

59. Each child in a certain class is required to have school supplies of 1 notebook and 2 pencils. One notebook costs \$1.09 and one pencil costs \$0.59. With \$15, what is the maximum number of children that can be provided with the required supplies? (Assume no tax.)

A. 6
B. 7
C. 8
D. 9
E. 12

60. If x and y are positive integers such that $0.75 = \frac{x}{y}$, what is the **least** possible value for x?

F. 1
G. 3
H. 4
J. 25
K. 75

61.

SONGS PLAYED DURING ONE HOUR

Number of Songs	Number of Radio Stations
14	8
15	4
16	4
17	5
18	9

The table above shows the number of songs played during a specific hour by 30 different radio stations. What is the mean number of songs played during that hour by these stations?

A. 6
B. 8
C. 16.1
D. 16.5
E. 18

62.

1 dollar = 7 lorgs
1 dollar = 0.5 dalts

Kwamme has 140 lorgs and 16 dalts. If he exchanges the lorgs and dalts for dollars according to the rates above, how many dollars will he receive? (Assume there are no exchange fees.)

F. \$28
G. \$52
H. \$182
J. \$282
K. \$988

63.

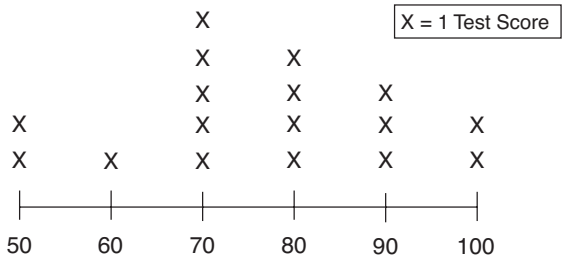
$$\begin{array}{r} -2 \\ 4 \\ -6 \\ 8 \\ . \\ . \\ -22 \\ \underline{+\ 24} \end{array}$$

If the missing terms in the problem above were filled in according to the pattern, what would be the sum of all the terms?

A. -6
B. 2
C. 6
D. 10
E. 12

64.

TEST SCORES FOR 17 STUDENTS



According to the figure above, what was the median score for the test?

F. 70
G. 75
H. $76\frac{8}{17}$
J. 80
K. 90

65. Ms. Grant's car gets between 20 and 22 miles per gallon, inclusive. The gasoline she uses costs between \$4.20 and \$4.50 per gallon, inclusive. What is the **greatest** amount Ms. Grant will spend on gasoline to drive her car 200 miles?

A. \$37.27
B. \$40.90
C. \$42.00
D. \$45.00
E. \$99.00

66. Which of the following shows the fractions $\frac{11}{3}$, $\frac{25}{7}$, and $\frac{18}{5}$ in order from least to greatest?

F. $\frac{25}{7}, \frac{18}{5}, \frac{11}{3}$
G. $\frac{25}{7}, \frac{11}{3}, \frac{18}{5}$
H. $\frac{18}{5}, \frac{11}{3}, \frac{25}{7}$
J. $\frac{18}{5}, \frac{25}{7}, \frac{11}{3}$
K. $\frac{11}{3}, \frac{18}{5}, \frac{25}{7}$

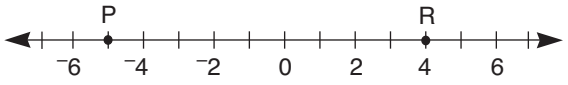
67.

Item	Quantity Puchased	Price Per Item
Rain Coat	1	$102.00
Slacks	2	$60.00
Shirt	2	$35.00

One state has a 6% sales tax on clothing items priced at $75 or higher, and no sales tax on clothing items priced under $75. What is the total tax on the items in the table above?

A. $6.12
B. $6.72
C. $13.32
D. $17.00
E. $203.12

68.



Point Q is to be placed on the number line one-third of the way from point R to point P. What number will be at the midpoint of segment $\overline{PQ}$?

F. 2
G. 1
H. 0
J. -1
K. -2

69. What is the solution to $\frac{0.21}{0.33} = \frac{x}{1.10}$?

A. 0.07
B. 0.67
C. 0.70
D. 6.70
E. 7.00

70. A group of mountain climbers started the day at an elevation of 125 feet below sea level. At the end of the day, they camped at 5,348 feet above sea level. What was the climbers' elevation gain for the day?

F. 5,223 ft
G. 5,373 ft
H. 5,377 ft
J. 5,463 ft
K. 5,473 ft

71. $4\frac{1}{2}$ ft, $5\frac{3}{4}$ ft, $4\frac{3}{4}$ ft, $6\frac{1}{4}$ ft, $5\frac{5}{8}$ ft

Jordan has 5 trees with the heights shown above. He plans to plant the trees in a row with the tallest tree in the middle, the next 2 shorter trees on either side, and the 2 shortest trees on either end of the row. How many different ways of ordering the 5 trees follow Jordan's plan?

A. 1
B. 2
C. 4
D. 6
E. 30

72. A prom dress originally priced at $450 is on sale for $\frac{1}{3}$ off the original price. In addition, Alia has a coupon for 10% off the discounted price. If there is a 6% sales tax on the final price of the dress, what would Alia's total cost be?

F. $111.30
G. $143.10
H. $270.30
J. $286.20
K. $297.00

73.

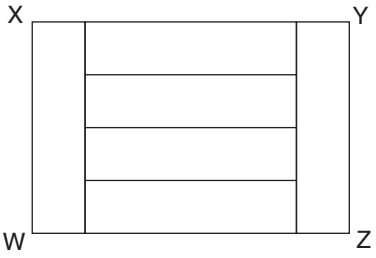


Figure WXYZ above is composed of 6 congruent rectangular panels. The area of figure WXYZ is 54 square centimeters. What is the perimeter of figure WXYZ in centimeters?

A. 24 cm
B. 30 cm
C. 36 cm
D. 45 cm
E. 50 cm

74. In the set of consecutive integers from 12 to 30, inclusive, there are 4 integers that are multiples of both 2 and 3. How many integers in the set are multiples of **neither** 2 nor 3?

F. 2
G. 5
H. 6
J. 13
K. 15

75. Three gallons of gasoline are needed to drive 65 miles. At this rate, how many gallons are needed to drive m miles?

A. $\frac{3}{65}$ gal.
B. $\frac{3m}{65}$ gal.
C. $3m$ gal.
D. $\frac{65}{3}$ gal.
E. $\frac{65m}{3}$ gal.

76.

PEOPLE PER VEHICLE AT CHECKPOINT

Number of People in the Vehicle	Percent of Vehicles
1	40%
2	35%
3	15%
4	7%
5 or more	3%

A researcher recorded the number of people in each vehicle that passed through a checkpoint. The table above shows the percent distribution for the 420 vehicles that passed the checkpoint yesterday morning. How many of the 420 vehicles contained **at least** 3 people?

F. 42
G. 63
H. 105
J. 315
K. 378

77. For what value of z is $z - \frac{1}{3}z = 12$?

A. -18
B. 4
C. 8
D. 12
E. 18

78.

8:54 a.m.
9:12 a.m.
9:24 a.m.
10:24 a.m.
11:18 a.m.

Light A flashes every 12 minutes, and light B flashes every 18 minutes. The two lights flash at the same time at 8:00 a.m. At how many of the times listed above will they again both flash at the same time?

F. 1
G. 2
H. 3
J. 4
K. 5

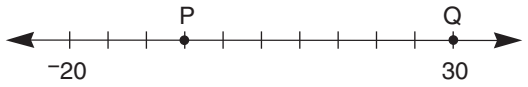
79. If Crystal multiplies her age by 3 and then adds 2, she will get a number equal to her mother's age. If m is her mother's age, what is Crystal's age in terms of m?

A. $-\frac{2}{3}m$
B. $\frac{m-2}{3}$
C. $3m + 2$
D. $\frac{m}{3} - 2$
E. $\frac{3}{m} - 2$

80. A certain insect has a mass of 75 milligrams. What is the insect's mass in grams?

F. 0.075 g
G. 0.75 g
H. 7.5 g
J. 75 g
K. 7,500 g

81.



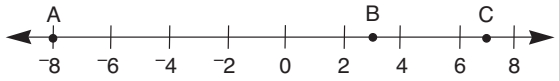
Points P and Q are points on the number line above, which is divided into equal sections. What is the value of PQ?

A. −5
B. 7
C. 30
D. 35
E. 50

82. If $r = 3q + 2$ and $q = \frac{1}{3^n}$ for $n = 1, 2$, or 3, what is the **least** possible value of ?

F. 1
G. $2\frac{1}{9}$
H. $2\frac{1}{3}$
J. 3
K. 5

83.



On the number line above, A is located at −8, B is located at 3, and C is located at 7. D (not shown) is the midpoint of $\overline{AB}$, and E (not shown) is the midpoint of $\overline{BC}$. What is the midpoint of $\overline{DE}$?

A. −1.5
B. 1.25
C. 1.75
D. 2.25
E. 7.5

84. Let $N = -(|-3| - |-8| + |-4|)$. What is the value of $-|N|$?

F. −9
G. −4
H. −1
J. 1
K. 9

85. A video game originally priced at $44.50 was on sale for 10% off. Julian received a 20% employee discount applied to the sale price. How much did Julian pay for the video game? (Assume that there is no tax.)

A. $31.15
B. $32.04
C. $35.60
D. $40.05
E. $43.61

86. A radio station plays Samantha's favorite song 6 times each day at random times between 8:00 a.m. and 5:00 p.m. The song is 5 minutes long. If Samantha turns on the radio at a random time between 8:00 a.m. and 5:00 p.m., what is the probability that her favorite song will be playing at that time?

F. $\frac{1}{30}$
G. $\frac{1}{18}$
H. $\frac{1}{6}$
J. $\frac{1}{5}$
K. $\frac{1}{3}$

87. RELATIONSHIP BETWEEN ROW A AND ROW B

Row A	1	2	3	4	5	6	7	8	9	10	11
Row B	1	1	2	2	3	3	4	4	5	5	6

The table above shows two rows of integers, Row A and Row B, and the relationship between them. Assume each row continues in the pattern shown. When the number 111 appears in Row A, what is the corresponding number that will appear in Row B?

A. 55
B. 56
C. 57
D. 59
E. 66

CONTINUE ON TO THE NEXT PAGE ▶

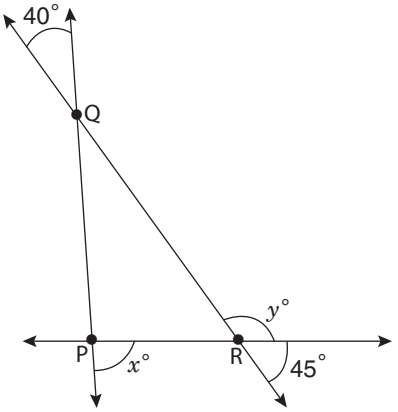
88. A cylindrical oil drum can hold 4,320 liters when it is completely full. Currently, the drum is $\frac{1}{3}$ full of oil. How many **kiloliters** (kL) of oil need to be added to fill the drum completely?

F. 1.44 kL
G. 2.88 kL
H. 4.32 kL
J. 14.40 kL
K. 28.80 kL

89. If x, y, and z are numbers such that $xy + xz = 100$, what is the value of $\frac{x}{5}(3y + 3z) + 10$?

A. $60 + 2x$
B. 62
C. 70
D. 130
E. $130 + 2x$

90.



The figure above shows three intersecting straight lines. What is the value of $y - x$?

F. 40
G. 50
H. 85
J. 95
K. 135

91. $(2p + 8) - (5 + 3p) =$

A. $3 - p$
B. $p + 3$
C. $5p - 3$
D. $5p + 3$
E. $5p + 13$

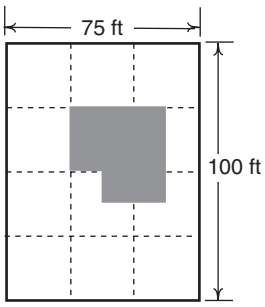
92. A recent survey asked students what pets they have. Based on the results, the following statements are all true:

23 students have dogs.
20 students have cats.
3 students have both dogs and cats.
5 students have no cats or dogs.

How many students were surveyed?

F. 40
G. 42
H. 45
J. 46
K. 51

93.



The drawing above represents a rectangular lot containing a building, indicated by the shaded region. The dashed lines divide the lot into twelve equal-sized squares. If the unshaded portion of the lot is to be paved, about how many square feet will be paved?

A. 4,000 sq ft
B. 5,000 sq ft
C. 6,000 sq ft
D. 7,000 sq ft
E. 8,000 sq ft

CONTINUE ON TO THE NEXT PAGE ▶

94. A 90-gram mixture contains three items, X, Y, and Z. The ratio of the weights of X and Y is 4:9, and the ratio of the weights of Y and Z is 9:5. If all of item Z were removed, what would be the new weight of the mixture?

F. 60 g
G. 65 g
H. 70 g
J. 72 g
K. 75 g

95. Marta and Kim are sisters. Five years ago, Kim's age was twice as great as Marta's age. If Marta is now m years old, which expression represents Kim's age now?

A. $2m + 5$
B. $2m$
C. $2(m - 5)$
D. $2(m + 5) - 5$
E. $2(m - 5) + 5$

96. A car travels at 4,400 feet per minute. If the radius of each tire on the car is one foot, how many revolutions does one of these tires make in a single minute? (Use the approximation $\frac{22}{7}$ for π.)

F. 700
G. 1,925
H. 13,828
J. 15,400
K. 27,657

97. One week the price of gasoline dropped by \$0.05 per gallon. Madison's car travels 27 miles each way to work, and her car travels 30 miles on each gallon of gasoline. What were her total savings, to the nearest cent, over the 5-day work week?

A. \$0.23
B. \$0.25
C. \$0.30
D. \$0.45
E. \$0.50

98. Nam worked on a job for 10 days. On each of the last 2 days, he worked 2 hours more than the mean number of hours he worked per day during the first 8 days. If he worked 69 hours in all, how many hours did he work during the last 2 days together?

F. 8.5
G. 10.5
H. 13.0
J. 15.0
K. 17.0

99. What is the greatest prime factor of 5,355?

A. 17
B. 51
C. 119
D. 131
E. 153

100. {1, 2, 3, 4, 5, 6}

Company X wants to assign each employee a 3-digit ID number formed from digits in the set shown above. No digit may appear more than once in an ID number, and no two employees may be assigned the same ID number. What is the greatest total number of possible different ID numbers?

F. 20
G. 120
H. 180
J. 216
K. 720

8. When $x = \frac{1}{2}$, what is the value of $\frac{8x-3}{x}$?

F. $\frac{1}{2}$

G. 2

H. $\frac{5}{2}$

J. 5

K. 10

9. In the standard (x,y) coordinate plane, what is the midpoint of the line segment that has endpoints (3,8) and (1,–4) ?

A. (–2,–12)

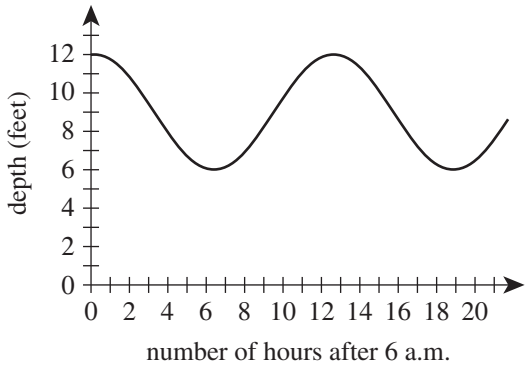
B. (–1, –6)

C. $\left(\frac{11}{2},-\frac{3}{2}\right)$

D. (2, 2)

E. (4,–12)

10. The fluctuation of water depth at a pier is shown in the figure below. One of the following values gives the positive difference, in feet, between the greatest water depth and the least water depth shown in this graph. Which value is it?



F. 3
G. 6
H. 9
J. 12
K. 19

11. What is the slope of the line through (–2,1) and (2,–5) in the standard (x,y) coordinate plane?

A. $\frac{3}{2}$

B. 1

C. –1

D. $-\frac{3}{2}$

E. –4

12. In Cherokee County, the fine for speeding is $17 for each mile per hour the driver is traveling over the posted speed limit. In Cherokee County, Kirk was fined $221 for speeding on a road with a posted speed limit of 30 mph. Kirk was fined for traveling at what speed, in miles per hour?

F. 13
G. 17
H. 43
J. 47
K. 60

13. What is the sum of the solutions of the 2 equations below?

$$8x = 12$$
$$2y + 10 = 22$$

A. $2\frac{2}{5}$

B. $7\frac{1}{2}$

C. 9

D. 10

E. $17\frac{1}{2}$

14. The average of 5 distinct scores has the same value as the median of the 5 scores. The sum of the 5 scores is 420. What is the sum of the 4 scores that are NOT the median?

F. 315
G. 320
H. 336
J. 350
K. 360

15. What is the value of the expression below?

$$\big|\,|-8+4| - |3-9|\,\big|$$

A. –18
B. –2
C. 0
D. 2
E. 18

16. Which of the following expressions is equivalent to $x^{\frac{2}{3}}$?

F. $\frac{x^2}{3}$

G. $\frac{x(2)}{3}$

H. $\sqrt{x^3}$

J. $\sqrt[3]{x}$

K. $\sqrt[3]{x^2}$

17. In the standard (x,y) coordinate plane, what is the slope of the line given by the equation $4x = 7y + 5$?

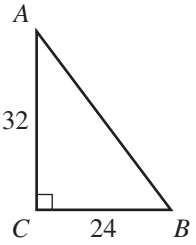
A. $-\frac{4}{7}$
B. $\frac{4}{7}$
C. $\frac{7}{4}$
D. 4
E. 7

18. For which of the following conditions will the sum of integers m and n *always* be an odd integer?

F. m is an odd integer.
G. n is an odd integer.
H. m and n are both odd integers.
J. m and n are both even integers.
K. m is an odd integer and n is an even integer.

19. The lengths of the 2 legs of right triangle $\triangle ABC$ shown below are given in inches. The midpoint of $\overline{AB}$ is how many inches from A ?

A. 16
B. 20
C. 21
D. 28
E. 40



20. In $\triangle DEF$, the length of $\overline{DE}$ is $\sqrt{30}$ inches, and the length of $\overline{EF}$ is 3 inches. If it can be determined, what is the length, in inches, of $\overline{DF}$?

F. 3
G. $\sqrt{30}$
H. $\sqrt{33}$
J. $\sqrt{39}$
K. Cannot be determined from the given information

21. Laura plans to paint the 8-foot-high rectangular walls of her room, and before she buys paint she needs to know the area of the wall surface to be painted. Two walls are 10 feet wide, and the other 2 walls are 15 feet wide. The combined area of the 1 window and the 1 door in her room is 60 square feet. What is the area, in square feet, of the wall surface Laura plans to paint?

A. 200
B. 340
C. 360
D. 390
E. 400

22. The length of a rectangle is 5 inches longer than the width. The perimeter of the rectangle is 40 inches. What is the width of the rectangle, in inches?

F. 7.5
G. 8
H. 15
J. 16
K. 17.5

23. 8% of 60 is $\frac{1}{5}$ of what number?

A. 0.96
B. 12
C. 24
D. 240
E. 3,750

24. Armin is trying to decide whether to buy a season pass to his college basketball team's 20 home games this season. The cost of an individual ticket is \$14, and the cost of a season pass is \$175. The season pass will admit Armin to any home basketball game at no additional cost. What is the minimum number of home basketball games Armin must attend this season in order for the cost of a season pass to be less than the total cost of buying an individual ticket for each game he attends?

F. 8
G. 9
H. 12
J. 13
K. 20

25. $\frac{4.8 \times 10^{-7}}{1.6 \times 10^{-11}} = ?$

A. 3.0×10^{4}
B. 3.0×10^{-4}
C. 3.0×10^{-18}
D. 3.2×10^{18}
E. 3.2×10^{4}

26. A circle in the standard (x,y) coordinate plane has center $C(-1,2)$ and passes through $A(2,6)$. Line segment $\overline{AB}$ is a diameter of this circle. What are the coordinates of point B ?

F. $(-6,-2)$
G. $(-5,-1)$
H. $(-4,-2)$
J. $(4, 2)$
K. $(5,10)$

27. Which of the following expressions is a factor of $x^3 - 64$?

A. $x - 4$
B. $x + 4$
C. $x + 64$
D. $x^2 + 16$
E. $x^2 - 4x + 16$